ABSTRACT

A semiconductor radiation detector 10 comprises a Si substrate 11 of an N -ype of low resistance, an arsenic coating layer 12 formed on the Si substrate, and a CdTe growth layer 13 of a P-type of high resistance laminated and formed thereon by the MOVPE method, which is divided into multiple plane elements of a hetero junction structure by means of division grooves 15 extending from the CdTe growth layer surface to the Si substrate. The Si substrate is heated in a hydrogen reducing atmosphere of a high temperature, and its surface is cleaned. On this Si substrate, GaAs powder or GaAs crystals are thermally decomposed, and coated by arsenic molecule to an extent at about one molecular layer, and an arsenic coating layer is thereby formed. On the Si substrate forming the arsenic coating layer, a CdTe growth layer is formed by the MOVPE method to a film thickness of about 0.2 to 0. 5 mm in an atmosphere of about 450 to 500 deg. C.